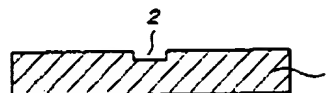


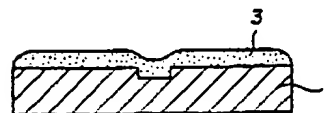
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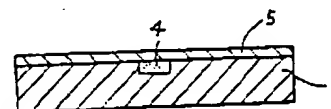


APPLICANT : IBIDEN CO LTD;

INVENTOR : YAMADA MASAYA;

INT.CL. : G02B 6/12 G02B 27/28

TITLE : PRODUCTION OF THIN-FILM
WAVEGUIDE TYPE OPTICAL
ISOLATOR



ABSTRACT : PURPOSE: To eliminate the need for a chemical etching treatment by growing the crystal film of a magneto-optical material only in the hollow grooves provided on a substrate surface to form a waveguide layer and forming a coating layer thereon.

CONSTITUTION: A photoresist film is formed in the part to be formed with the optical wave guide by a resist pattern on the substrate 1 and a metallic film is formed by sputtering, etc., over the entire surface; thereafter, the metallic film on the resist pattern is removed together with the resist to expose only the part to be formed with the optical wave guide and is subjected to an ion beam etching or the like to form the hollow groove 2 having the inside surface of a specular surface state. A single crystal film 3 is grown over the entire surface of the substrate 1 if an operation to grow the single crystal is carried out. The optical wave guide 4 consisting of the single crystal film existing only in the hollow groove is formed if the single crystal film formed in the part exclusive of the hollow groove 2 of the part to be formed with the optical wave guide is removed by polishing. The surface of the single crystal film 4 in the hollow groove 2 is also made into the specular state by polishing and, therefore, the coating layer 5 can be formed thereon. The need for a stage for etching the crystalline film to remove the unnecessary part and to shape the film is eliminated in this way and the accuracy and efficient mass production is possible.

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